

WHAT IS CLAIMED:

- 1 1. A method of handling exceptions encountered during the translation of subject  
2 program code into target code, comprising:  
3 detecting the occurrence of an exception;  
4 selecting a level of subject context precision required for the detected exception  
5 from a plurality of possible levels of precision; and  
6 invoking a signal handler to handle the detected exception using the selected level  
7 of precision.
- 1 2. The method of claim 1, wherein the exception occurrence detecting step detects  
2 the occurrence of an exception signal during translation of the subject program code.
- 1 3. The method of claim 2, wherein the target code generated by the translation  
2 invokes a proxy signal handler to handle the detected exception.
- 1 4. The method of claim 1, wherein the exception occurrence detecting step detects  
2 the occurrence of an exception signal during execution of the target code.
- 1 5. The method of claim 4, wherein a target operating system invokes a proxy signal  
2 handler to handle the detected exception.
- 1 6. The method of claim 1, wherein the default level of subject context precision is a  
2 last known stack frame.
- 1 7. The method of claim 6, wherein the last known stack frame includes a last known  
2 stack pointer value, a base pointer value, and a program counter register value.

1 8. The method of claim 7, wherein said default level of subject context precision  
2 requires no rectification of subject register values.

1 9. The method of claim 1, wherein one of said possible levels of subject context  
2 precision is no subject state.

1 10. The method of claim 1, wherein one of said possible levels of subject context  
2 precision is a precise program counter state including a precise program counter value.

1 11. The method of claim 1, wherein one of said possible levels of subject context  
2 precision is a precise subject register state including rectified subject registers and a  
3 precise program counter value.

1 12. In a method of handling subject code exceptions in a translation system  
2 employing a translator to translate subject code to target code, the steps comprising:  
3 generating a target context;  
4 reconstructing a subject context using said target context, thereby generating a  
5 reconstructed subject context; and  
6 executing a translated version of a subject signal handler associated with a  
7 particular said exception using the reconstructed subject context.

1 13. The method of claim 12 wherein the step of reconstructing a subject context  
2 comprises reconstructing less than the entire subject processor state.

1 14. The method of claim 12 wherein said step of reconstructing a subject context  
2 comprises selecting one of a plurality of subject context precision levels for processing  
3 said exception.

- 1 15. The method of claim 14 wherein the level of subject precision is a zero level  
2 wherein no subject state is passed to said translated subject signal handler.
- 1 16. The method of claim 14 wherein said level is a level wherein only a last known  
2 stack frame is passed to said translated subject signal handler.
- 1 17. The method of claim 14 wherein said level is a level wherein only a precise  
2 program counter value is passed to said translated subject signal handler.
- 1 18. The method of claim 14 wherein said level of precision is a level wherein the  
2 precise subject context is passed to said translated subject signal handler.
- 1 19. The method of claim 14 wherein said step of reconstructing a subject context is  
2 performed by proxy signal handler code.
- 1 20. The method of claim 19 wherein said proxy signal handler code is registered in  
2 the target code by said translator and wherein said translator further raises a flag to said  
3 proxy signal handler indicating which of said plurality of subject context precision levels  
4 is to be used in response to said particular exception.
- 1 21. The method of claim 19 wherein said particular exception is detected during  
2 decoding of the subject code by said translator.
- 1 22. The method of claim 21 wherein said translator responds to detection of said  
2 particular exception during decoding to plant target code which generates said target  
3 context and invokes operation of the proxy signal handler code.
- 1 23. The method of claim 19 wherein said particular exception arises during execution  
2 of said target code.

1 24. The method of claim 23 wherein a target operating system responds to occurrence  
2 of said particular exception during execution of said target code to pass target context to  
3 said proxy signal handler code.

1 25. The method of claim 24 wherein, after receiving said target context, said proxy  
2 signal handler code calls the translator, which then invokes a selected translated subject  
3 signal handler.

1 26. The method of claim 14 wherein said exception is caused by one of a plurality of  
2 asynchronous external events and wherein said exception is handled using a selected  
3 default level of precision assigned to all asynchronous events.

1 27. The method of claim 26 wherein said selected default level is a last known stack  
2 frame.

1 28. The method of claim 19 wherein said proxy signal handler code is arranged to  
2 interact with a subject register bank.